

REMARKS

Claims 1 - 12 are pending in the present application, of which claims 5 and 6 have been withdrawn from consideration. By this Amendment, claims 1 - 4 and 7 - 10 have been amended to place the application in better condition for examination. Early examination and allowance of the application is respectfully requested.

Claim Rejections under 35 USC §103

Claims 1, 7 and 11-12 are rejected under 35 USC §103(a) as being unpatentable over Kledzik et al. (U.S. Patent No. 6,313,998) in view of Hernandez et al. (cited by Applicant).

The Office equates the “carrier mounting pads 110” of Kledzik with the component pads” of the present invention and the “carrier leads 109” of the Kledzik with the “printed wiring board pads” of the present invention.

According to the present invention, “the printed wiring board pads are more dispersed than the component pads” with the pitch p2 for the printed wiring board pads (36a) being approximately twice the pitch p1 for the component pads (23a) (p. 10, 11, 18-22) and the number of printed wiring board pads (36a) being smaller than the number of component pads (23a) (p. 10, lines 23-24; p. 12, line 8 p. 13 line 12).

On the other hand, according to col. 4, lines 61-62 and FIG. 1 of Kledzik, it is apparent that the carrier leads 109 and the carrier mounting pads 110 are connected by a one-to-one correspondence with the number of carrier leads 109 being equal to the number of carrier

mounting pads 110. There is no teaching or indication in Kledzik that the carrier leads 109 are more dispersed than the carrier mounting pads 110.

Accordingly, it is believed that claims 1, 7, and 11-12 are allowable over the combination of Kledzik and Hernandez.

Furthermore, it should be noted that the printing wiring board pads 36a of the auxiliary substrate for hierarchical mounting 14 of the present invention are formed on the lower surface 14f of the auxiliary substrate 14.

In contradistinction, the carrier leads 109 extend from the side of the carrier 105 according to the circuit board assembly disclosed in Kledzik. Therefore, their structure of mounting is very different.

In rejecting the claimed invention, the outstanding Office Action has positively stated that:

“Kledzik does not disclose the second component is larger in size than the first component.”

The Applicants agrees with this Office assessment of the shortcoming of Kledzik. However, the outstanding Office Action attempted to supplement the shortcoming of Kledzik by stating that:

“Herandez shows a second component (IC die 24) is larger in size than a first component (compactor 52).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a second component is larger than a first component as taught by Herandez to employ the printed circuit board unit of Kledzik for purpose of limiting space of stacked chip modules mounted on a printed circuit board.”

The Applicants respectfully disagree. It should be noted that in Kledzik, both the first and second components 104U, 104L and the carrier 105 have rectangular shapes and have leads coming from only both long sides thereof as shown in Figure 1. In Hernandez, the capacitor 52 and the IC die 24 have square shapes with leads coming from all four sides as shown in Figures 1A, 2B, 4A and 6A.

It should be noted that once the four side lead components of Hernandez be transported to the printed circuit board unit of Kledzik which is capable of only accommodating components with leads coming from two opposite side, Kledzik would become inoperable.

MPEP 2143.01 has specifically stated that:

“[i]f proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).”

Therefore, in the opinion of MPEP and the Federal Circuit, the claimed invention is not rendered obvious by the Office formulated obvious rejection.

As it is clear that the claimed invention is indeed not rendered obvious by the asserted prior art. However, for the sake of advancing the prosecution of this application, each of claims 1- 4 and 7 - 10 have been amended to call for that the printed wiring board pads are fewer in number than the component pads so that the printed wiring board pads are arranged with a larger pitch than the component pads.

Kledzik merely discloses the carrier leads 109 and the carrier mounting pads 110 that are in electrical contact with each other. There is no teaching in Kledzik that the carrier leads 109 are fewer in number than the carrier mounting pads 110 so that the carrier leads 109 are arranged

with a larger pitch than the carrier mounting pads 110. As asserted in the response to the final office Action, it is apparent that the carrier leads 109 and the carrier mounting pads 10 are connected by a one-to-one correspondence with the number of carrier leads 109 being equal to the number of carrier mounting pads 110. Further, please note that in each of claims 2-4 and 8 - 10, a plurality of ground pads and/or a plurality of power supply pads of the component pads are connected to only one of the printed wiring boards pads, thereby realizing the reduction of the printed wiring board pads in number compared with the component pads. As a result, the present invention realizes hierarchical mounting of components on a printed wiring board without wiring patterns being formed too densely thereon.

Herandez merely discloses that a second component (IC die 24) is larger in size than a first component (decoupling capacitor 52). There is no suggestion or teaching in Herandez that the printed wiring board pads are fewer in number than the component pads so that the printed wiring board pads are arranged with a larger pitch than the component pads.

Accordingly, it is respectfully submitted that claims 1- 4 and 7 - 12, as newly amended, are even more patentably distinguishable over the combination of Kledzik and Herandez.

Reconsideration and withdrawal of this rejection are respectfully requested.

Claims 2-4 and 8-10 are rejected under 35 USC §103(a) as being unpatentable over Kledzik in view of Herandez and further in view of Stearns et al. (U.S. Patent No. 6,160,705).

For the same reason as stated above, it is believed that claims 2-4 and 8-10 are allowable over combination of Kledzik, Hernandez and Stearns.

Furthermore, in rejecting the claimed invention, the outstanding Office Action has specifically stated that:

“Kledzik and Herandez disclose all the limitation of the claimed invention, except for the auxiliary substrate having ground and power supply layers (18, 20) inside.”

The Applicants agree with the Office assessment that the references fail to disclose or teach the auxiliary substrate having ground and power supply layers inside. However, Applicants respectfully disagree that all other limitations are disclosed. In fact, as explained in response to the rejection in which this rejection is based thereupon, the Office proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, therefore, there is no suggestion or motivation to make the proposed modification.

For the foregoing reasons, the claimed invention patentably distinguishes over the prior art. Reconsideration and withdrawal of this rejection are respectfully requested.

Prior Art Indicated To Be Pertinent To The Disclosure

The Office has provided a list of prior art indicated to be pertinent to the Applicants' invention. Consistent with the understanding as stipulated in MPEP 706.02 that only the best prior art should be applied, this list of prior art not having been applied by the Office, it is the Applicants' understanding that the Office must have considered the listed prior art to be no more pertinent than the applied prior art of record.

CONCLUSION


It is believed that this Amendment is fully responsive to the Office Action dated **March 12, 2003**.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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